

SEQUENCE LISTING

<110> Japan as Represented by Director General of Okazaki National Research  
Institutes

<120> Nav2 channel gene-deficient non-human animals

<130> U2001P059

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<150> JP 2000/237320

<151> 2000-08-04

<150> JP 2000/241637

<151> 2000-08-09

<150> JP 2001/222263

<151> 2001-07-23

<160> 8

<170> PatentIn Ver. 2.1

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<211> 446

<212> DNA

<213> Rattus norvegicus

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T0E080 E5902660

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agccgggata tagaagcagg caaaaaactt ccaattgcct atggaaccct tcctcaagga 180  
accgtgtcag agcccttggga agatgtggat ccatactact atgttaagag aaatacttcc 240  
atggicttaa acagaaacag agtcatcttc aggttcaatg cgtttccat cctctgcacg 300  
ttgtctcctt taagctctct cagaagagct gttatcaagg ttttgggtgca cccctttttg 360  
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caacaacctc cgtatgagag atctgagaag acaagcccag gagagcaaag ggctctctgtg 180  
  
agccttgcat ctggggttct tgctggagtt ttagtgaaga ctgcatttg acagcaacta 240

0920653-060301

taaaaccgaa a atg ttg act tcc cca gag ccg aag ggc ctt gtc cca ttt 290

Met Leu Thr Ser Pro Glu Pro Lys Gly Leu Val Pro Phe

1

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aca aca gag tca ctt gaa ctt ata gaa aat cac att gct aaa aaa tgc 338

Thr Thr Glu Ser Leu Glu Leu Ile Glu Asn His Ile Ala Lys Lys Cys

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aat gaa gac ccc gaa gaa gaa gaa ggt tta aaa cca agt cgt aat cta 386

Asn Glu Asp Pro Glu Glu Glu Glu Gly Leu Lys Pro Ser Arg Asn Leu

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gaa gct ggc aaa aga ctt cca att ccc tat gga acc ctc cct cga gga 434

Glu Ala Gly Lys Arg Leu Pro Ile Pro Tyr Gly Thr Leu Pro Arg Gly

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acc gtg tca gag ccc ttg gaa gat gtg gat cca tac tac tat gtt aag 482

Thr Val Ser Glu Pro Leu Glu Asp Val Asp Pro Tyr Tyr Tyr Val Lys

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aga aat act ttc atg gtc tta aac aga agc aga gtc atc ttc agg ttc 530

Arg Asn Thr Phe Met Val Leu Asn Arg Ser Arg Val Ile Phe Arg Phe

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aat gcg gtt tcc atc ttc tgc aca ttg tct cct cta aac tcc ctc aga 578

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10E080" 65903660





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Leu Met Thr Gln Asp Tyr Pro Glu Leu Leu Tyr His Gln Ile Leu Tyr

350

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360

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gct tca gga aag gtc tac atg ata ttt ttt gtt atg atc agt ttc tgg 1394

Ala Ser Gly Lys Val Tyr Met Ile Phe Phe Val Met Ile Ser Phe Trp

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ttt gcc ttc tat ttg aca agt ttg ttc ttg ggc ata ctc act atg acc 1442

Phe Ala Phe Tyr Leu Thr Ser Leu Phe Leu Gly Ile Leu Thr Met Thr

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tat gaa aag gaa aag cag aga gcc tgt gag gaa tct gga ggc ctt gat 1490

Tyr Glu Lys Glu Lys Gln Arg Ala Cys Glu Glu Ser Gly Gly Leu Asp

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ccc aaa tgt caa cag aca gtg aaa gaa ctc gac gaa gaa aat gac gca 1538

Pro Lys Cys Gln Gln Thr Val Lys Glu Leu Asp Glu Glu Asn Asp Ala

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gct gag atg gaa act aca caa ata gaa atg aag aaa aga tcc cca act 1586

Ala Glu Met Glu Thr Thr Gln Ile Glu Met Lys Lys Arg Ser Pro Thr

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tct ata aac acc aca ctg gat ata ctg gaa gac act acc ctc gga cac 1634

Ser Ile Asn Thr Thr Leu Asp Ile Leu Glu Asp Thr Thr Leu Gly His

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aga gaa gaa cca gaa aca tcc agg aag aaa tgc cca ata tgt tgg cat 1682

Arg Glu Glu Pro Glu Thr Ser Arg Lys Lys Cys Pro Ile Cys Trp His

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aag ttt att aaa acc tgc ttc atc tgg aaa tgc tct ccc tgt tgg gta 1730

Lys Phe Ile Lys Thr Cys Phe Ile Trp Lys Cys Ser Pro Cys Trp Val

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aaa ctg aac gag ttt gct gat aga gtt ata aca cac cca ttg gct gat 1778

Lys Leu Asn Glu Phe Ala Asp Arg Val Ile Thr His Pro Leu Ala Asp

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ctt ttt ctt gtc atc tgc atc gtt tta aac ata tgc ttc ctc gcc cta 1826

Leu Phe Leu Val Ile Cys Ile Val Leu Asn Ile Cys Phe Leu Ala Leu

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gaa cat ttt cca atg agc gag gag ctc agg tct ctc ctt cac gtt gga 1874

Glu His Phe Pro Met Ser Glu Glu Leu Arg Ser Leu Leu His Val Gly

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aat ttg gtt ttt att gga att tac aca ata gaa ctg att ttg aag ata 1922

Asn Leu Val Phe Ile Gly Ile Tyr Thr Ile Glu Leu Ile Leu Lys Ile

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atc gct atg cat cca tat ggg tat ttt caa ata agc tgg aat att ttt 1970

Ile Ala Met His Pro Tyr Gly Tyr Phe Gln Ile Ser Trp Asn Ile Phe

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575

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gtt gaa gga cta gct gtt tta ata aca gtc cca ttg ata ttt ata aaa 2066  
 Val Glu Gly Leu Ala Val Leu Ile Thr Val Pro Leu Ile Phe Ile Lys

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ctg ggg aag tac gga cca cca ttt aag agt ttg atg cgc atc ctt ggt 2114  
 Leu Gly Lys Tyr Gly Pro Pro Phe Lys Ser Leu Met Arg Ile Leu Gly

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agc tca ttg atg gcc ctg aaa gat ttg gtc ctg ttg ctc tgc ata ttc 2162  
 Ser Ser Leu Met Ala Leu Lys Asp Leu Val Leu Leu Leu Cys Ile Phe

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gtt tac ttc tct gct gtg ttc ggc atg aag ctg ttt ggt cga agt tac 2210  
 Val Tyr Phe Ser Ala Val Phe Gly Met Lys Leu Phe Gly Arg Ser Tyr

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aag gat tgt gtc tgc cac ata aag gaa gac tgc caa ccc caa cgc tgg 2258  
 Lys Asp Cys Val Cys His Ile Lys Glu Asp Cys Gln Pro Gln Arg Trp

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cac atg agt gac ttc ctt cat gcc tac atg acc gtg ttc cga atc ctc 2306  
 His Met Ser Asp Phe Leu His Ala Tyr Met Thr Val Phe Arg Ile Leu

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685

tgt gga gag tgg ata gag aca tta tgg gag tgt atg gag gtt gca ggc 2354

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Cys Gly Glu Trp Ile Glu Thr Leu Trp Glu Cys Met Glu Val Ala Gly

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cag gcc tgg tgt att cct ttt tac atg atg gtc att tta att gga aac 2402

Gln Ala Trp Cys Ile Pro Phe Tyr Met Met Val Ile Leu Ile Gly Asn

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tta ttg ata ctt tac ctc ttt gtg aca ttg gtg agc tct ttc agt tac 2450

Leu Leu Ile Leu Tyr Leu Phe Val Thr Leu Val Ser Ser Phe Ser Tyr

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tat gat gct aca tcg gaa gtg aac aaa gaa gcc aaa aac ctt cag ctt 2498

Tyr Asp Ala Thr Ser Glu Val Asn Lys Glu Ala Lys Asn Leu Gln Leu

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gcc atg gca agg ata aag tcg gga ata aac tcc atg ctt ctt aaa tta 2546

Ala Met Ala Arg Ile Lys Ser Gly Ile Asn Ser Met Leu Leu Lys Leu

750

755

760

765

atg tgc aca gaa aga agt gtt cct aca gaa gca aca gac caa ata tgt 2594

Met Cys Thr Glu Arg Ser Val Pro Thr Glu Ala Thr Asp Gln Ile Cys

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Asp Pro Ser Val Lys Glu Asn Ile Ser Gly His Thr Leu Ser Glu Leu

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agc aac acc caa act ttc ctc aga tat aag gac cag agc agc agc act 2690

Ser Asn Thr Gln Thr Phe Leu Arg Tyr Lys Asp Gln Ser Ser Ser Thr

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Glu Lys Thr Pro Val Thr Glu Ser Glu Ser Gln Ser Leu Ile Ala Ser			
815	820	825	
ccc agt gcc tct gaa act gtg ccg att gct tca gga gaa tct gat ata			2786
Pro Ser Ala Ser Glu Thr Val Pro Ile Ala Ser Gly Glu Ser Asp Ile			
830	835	840	845
gaa aat ctg gat aac aag gag act cgg agc aag tct ggg aat gga ggc			2834
Glu Asn Leu Asp Asn Lys Glu Thr Arg Ser Lys Ser Gly Asn Gly Gly			
	850	855	860
agt aaa gag aaa atg aag cag tct agc tca tct gag tgc agc aca gtt			2882
Ser Lys Glu Lys Met Lys Gln Ser Ser Ser Ser Glu Cys Ser Thr Val			
	865	870	875
gat atc gct att tct gaa gaa gaa gaa atg gtc tat gaa cat gaa aag			2930
Asp Ile Ala Ile Ser Glu Glu Glu Glu Met Val Tyr Glu His Glu Lys			
880	885	890	
tca aag ctt cat aaa aat ggt tat gaa cgc aaa tct tca act ggt caa			2978
Ser Lys Leu His Lys Asn Gly Tyr Glu Arg Lys Ser Ser Thr Gly Gln			
895	900	905	
atc agt aga gaa tct agg aat gga aag att tgg aaa aac atc agg aaa			3026
Ile Ser Arg Glu Ser Arg Asn Gly Lys Ile Trp Lys Asn Ile Arg Lys			
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act tgc tgc aag ata gta gag aac agc tgg ttt gag tgt ttc att ggc 3074  
 Thr Cys Cys Lys Ile Val Glu Asn Ser Trp Phe Glu Cys Phe Ile Gly

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ctg gtc act ctg ctc tgc aca ggc act ctg gct ctt gaa gac ata tat 3122  
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att gat cag aga aaa acc act aaa atc tta ctg gaa tat gcg gac atg 3170  
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ata ttt gca tac atc ttc att ctg gag atg ctt ctc aag tgg gtg gct 3218  
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tat ggc ttt aaa gcc ttt ttc tcc aac aac tgg tac aaa ctg gac ttt 3266  
 Tyr Gly Phe Lys Ala Phe Phe Ser Asn Asn Trp Tyr Lys Leu Asp Phe

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1005

atg gtt gtt atc gtg ttt tgt ctt agc tta ata ggc aaa act cga gaa 3314  
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gat ctg aac cct ctg aca tca ata aag ttc ctt cga gca cta aga gtt 3362  
 Asp Leu Asn Pro Leu Thr Ser Ile Lys Phe Leu Arg Ala Leu Arg Val

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cig tgc cag ttt gaa aga atg aag gtc gtc cig aga gct ttg ata aaa 3410  
 Leu Ser Gln Phe Glu Arg Met Lys Val Val Leu Arg Ala Leu Ile Lys

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1045

1050

aca acc tta ccc act gtg agc gtc ttt cta gtc tgc cta atg atc tgg 3458  
 Thr Thr Leu Pro Thr Val Ser Val Phe Leu Val Cys Leu Met Ile Trp

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cig ctt ttc agt gtt att gga gtc cag tta ttt gct ggc aag ttc tat 3506  
 Leu Leu Phe Ser Val Ile Gly Val Gln Leu Phe Ala Gly Lys Phe Tyr

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gaa tgc att gac cca aca aag gga gaa aga ttc cct gta ttt gaa gtt 3554  
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atg aat aaa agt cag tgt gaa aaa cig tta ttc aat gaa tca atg ccg 3602  
 Met Asn Lys Ser Gln Cys Glu Lys Leu Leu Phe Asn Glu Ser Met Pro

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tgg gag aat gca aaa ctg aac ttt gat aat gtt gga aat ggt ttt ctt 3650  
 Trp Glu Asn Ala Lys Leu Asn Phe Asp Asn Val Gly Asn Gly Phe Leu

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tct tta ctc caa gtg gca aca ttt aat gga tgg atc agt att atg aat 3698  
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ttc act ctg gaa tgc ata ctg aag ctc act gcc ttc cgt tgc cac tac			4178
Phe Thr Leu Glu Cys Ile Leu Lys Leu Thr Ala Phe Arg Cys His Tyr			
1295	1300	1305	
ttc acc agt gca tgg aat gtt cat gac ttt atg gtg gtc att ttc tcc			4226
Phe Thr Ser Ala Trp Asn Val His Asp Phe Met Val Val Ile Phe Ser			
1310	1315	1320	1325
att aca ggg ctg ctg cta ccc ttg aca ata gga caa tac ttt gtg cct			4274
Ile Thr Gly Leu Leu Leu Pro Leu Thr Ile Gly Gln Tyr Phe Val Pro			
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cct tcc ctg gtg cag ctg att ctt ctc tct cga gtc atc cac atc ctg			4322
Pro Ser Leu Val Gln Leu Ile Leu Leu Ser Arg Val Ile His Ile Leu			
1345	1350	1355	
cgt cct ggg aaa gga ccg aag gtg ttc cat gac ctg atg ctt ccc ttg			4370
Arg Pro Gly Lys Gly Pro Lys Val Phe His Asp Leu Met Leu Pro Leu			
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att ctg gcg ctc cca gca ttg ctg aac att agt ctt ctc atc ttc ctg			4418
Ile Leu Ala Leu Pro Ala Leu Leu Asn Ile Ser Leu Leu Ile Phe Leu			
1375	1380	1385	



cct tct cag aaa aaa agc agg acc ttg agt gaa gai gac ttt agg aga 4802

Pro Ser Gln Lys Lys Ser Arg Thr Leu Ser Glu Asp Asp Phe Arg Arg

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ttc ttc cgg gtg tgg aac agg ttt gac cct gat agg acc cag tac ata 4850

Phe Phe Arg Val Trp Asn Arg Phe Asp Pro Asp Arg Thr Gln Tyr Ile

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1525

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gac tct agc aag ctt tct gat ttt gca gct gct ctg gat cct cct ctt 4898

Asp Ser Ser Lys Leu Ser Asp Phe Ala Ala Ala Leu Asp Pro Pro Leu

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Phe Met Ala Lys Pro Asn Lys Gly Gln Leu Val Ala Met Asp Leu Pro

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Met Ala Ala Gly Asp Arg Ile His Cys Leu Asp Ile Leu Leu Ala Phe

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acg aaa aga gtg atg gga aag gat gag agg gtg gag aaa atc ctt tca 5042

Thr Lys Arg Val Met Gly Lys Asp Glu Arg Val Glu Lys Ile Leu Ser

1585

1590

1595

gag ata gaa tcc ggg ttc atg tta gcg aac cct ttc aaa atc act tat 5090

Glu Ile Glu Ser Gly Phe Met Leu Ala Asn Pro Phe Lys Ile Thr Tyr

1600

1605

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gag ccg att aca act act ttg aaa cgc aaa caa gag gca gtt tca gca 5138

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Glu Pro Ile Thr Thr Thr Leu Lys Arg Lys Gln Glu Ala Val Ser Ala

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acc atc atc cag cgt gca tat aaa agc tac cgc tta agg caa aat gac 5186

Thr Ile Ile Gln Arg Ala Tyr Lys Ser Tyr Arg Leu Arg Gln Asn Asp

1630

1635

1640

1645

aag aat gta tca gat act cct gct ata gat gac cgc aga gat gat ctt 5234

Lys Asn Val Ser Asp Thr Pro Ala Ile Asp Asp Arg Arg Asp Asp Leu

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Thr Ser Lys Gly Ala His Ser Gly Lys Ile Glu Glu Lys Ala Ser Ile

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1670

1675

cag acc cag att taa tgacattcc cacttctact ttctttacat atgtccccaa 5337

Gln Thr Gln Ile

1680

gcactaaatg ttaactgaic ttaagctigga gatcagaaac tagagataat gataacaict 5397

gtgtgccag acatctccat gacaagctca gcttiagggt cagtcitctg atgcatcaga 5457

aagacagcag ctacgcgttg ctgcg 5482

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<213> Mus musculus

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Pro Glu Glu Glu Glu Gly Leu Lys Pro Ser Arg Asn Leu Glu Ala Gly  
35 40 45  
Lys Arg Leu Pro Ile Pro Tyr Gly Thr Leu Pro Arg Gly Thr Val Ser  
50 55 60  
Glu Pro Leu Glu Asp Val Asp Pro Tyr Tyr Tyr Val Lys Arg Asn Thr  
65 70 75 80  
Phe Met Val Leu Asn Arg Ser Arg Val Ile Phe Arg Phe Asn Ala Val  
85 90 95  
Ser Ile Phe Cys Thr Leu Ser Pro Leu Asn Ser Leu Arg Arg Ala Ala  
100 105 110  
Ile Lys Ala Leu Val His Pro Leu Phe Arg Leu Leu Ile Leu Ile Ser  
115 120 125  
Val Leu Thr Asp Ser Ile Leu Met Cys Met Ser Asn Leu Pro Glu Trp  
130 135 140  
Ile Leu Ala Ile Glu Asn Thr Leu Leu Gly Ile Tyr Ala Phe Glu Ile  
145 150 155 160  
Leu Val Lys Val Ile Ala Arg Gly Ile Trp Ala Gly Ser Phe Ser Phe  
165 170 175  
Leu Gly Asp Leu Trp Asn Trp Leu Asp Phe Ser Val Thr Leu Phe Glu  
180 185 190  
Leu Ile Thr Arg Phe Ser Pro Leu Ser Ser Phe Leu Met Leu Lys Thr  
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Ile Arg Thr Phe Arg Ile Leu Lys Ile Ile Pro Leu Asn His Gly Leu  
 210 215 220  
 Gln Ser Ile Val Met Thr Leu Ala Gln Cys Leu Lys Lys Leu Phe Gly  
 225 230 235 240  
 Ala Ile Ala Leu Ala Leu Phe Phe Leu Ala Val Phe Ser Leu Leu Gly  
 245 250 255  
 Met Gly Leu Phe Met Gly Asn Leu Lys His Lys Cys Leu Arg Trp Pro  
 260 265 270  
 Glu Glu Asn Glu Asn Glu Thr Leu His Asn Arg Thr Gly Ser Leu Asn  
 275 280 285  
 Tyr Ser Pro Glu Arg Ile Asn Phe Tyr Tyr Met Glu Gly Ala Lys Tyr  
 290 295 300  
 Ala Leu Leu Cys Gly Asn Arg Thr Asp Ala Gly Gln Cys Pro Glu Gly  
 305 310 315 320  
 Tyr Val Cys Val Lys Glu Gly Thr Asn Pro Asp Asn Gly Phe Thr Ser  
 325 330 335  
 Phe Asp Asn Phe Gly Trp Ser Leu Leu Ala Met Phe Arg Leu Met Thr  
 340 345 350  
 Gln Asp Tyr Pro Glu Leu Leu Tyr His Gln Ile Leu Tyr Ala Ser Gly  
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 Lys Val Tyr Met Ile Phe Phe Val Met Ile Ser Phe Trp Phe Ala Phe  
 370 375 380  
 Tyr Leu Thr Ser Leu Phe Leu Gly Ile Leu Thr Met Thr Tyr Glu Lys  
 385 390 395 400  
 Glu Lys Gln Arg Ala Cys Glu Glu Ser Gly Gly Leu Asp Pro Lys Cys  
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 Glu Thr Thr Gln Ile Glu Met Lys Lys Arg Ser Pro Thr Ser Ile Asn

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450					455					460						
Pro	Glu	Thr	Ser	Arg	Lys	Lys	Cys	Pro	Ile	Cys	Trp	His	Lys	Phe	Ile	
465					470					475					480	
Lys	Thr	Cys	Phe	Ile	Trp	Lys	Cys	Ser	Pro	Cys	Trp	Val	Lys	Leu	Asn	
485					490					495						
Glu	Phe	Ala	Asp	Arg	Val	Ile	Thr	His	Pro	Leu	Ala	Asp	Leu	Phe	Leu	
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Val	Ile	Cys	Ile	Val	Leu	Asn	Ile	Cys	Phe	Leu	Ala	Leu	Glu	His	Phe	
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Pro	Met	Ser	Glu	Glu	Leu	Arg	Ser	Leu	Leu	His	Val	Gly	Asn	Leu	Val	
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Phe	Ile	Gly	Ile	Tyr	Thr	Ile	Glu	Leu	Ile	Leu	Lys	Ile	Ile	Ala	Met	
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His	Pro	Tyr	Gly	Tyr	Phe	Gln	Ile	Ser	Trp	Asn	Ile	Phe	Asp	Ser	Ile	
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Leu	Ala	Val	Leu	Ile	Thr	Val	Pro	Leu	Ile	Phe	Ile	Lys	Leu	Gly	Lys	
595					600					605						
Tyr	Gly	Pro	Pro	Phe	Lys	Ser	Leu	Met	Arg	Ile	Leu	Gly	Ser	Ser	Leu	
610					615					620						
Met	Ala	Leu	Lys	Asp	Leu	Val	Leu	Leu	Leu	Cys	Ile	Phe	Val	Tyr	Phe	
625					630					635					640	
Ser	Ala	Val	Phe	Gly	Met	Lys	Leu	Phe	Gly	Arg	Ser	Tyr	Lys	Asp	Cys	
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Val	Cys	His	Ile	Lys	Glu	Asp	Cys	Gln	Pro	Gln	Arg	Trp	His	Met	Ser	
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Asp Phe Leu His Ala Tyr Met Thr Val Phe Arg Ile Leu Cys Gly Glu  
 675 680 685  
 Trp Ile Glu Thr Leu Trp Glu Cys Met Glu Val Ala Gly Gln Ala Trp  
 690 695 700  
 Cys Ile Pro Phe Tyr Met Met Val Ile Leu Ile Gly Asn Leu Leu Ile  
 705 710 715 720  
 Leu Tyr Leu Phe Val Thr Leu Val Ser Ser Phe Ser Tyr Tyr Asp Ala  
 725 730 735  
 Thr Ser Glu Val Asn Lys Glu Ala Lys Asn Leu Gln Leu Ala Met Ala  
 740 745 750  
 Arg Ile Lys Ser Gly Ile Asn Ser Met Leu Leu Lys Leu Met Cys Thr  
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 Glu Arg Ser Val Pro Thr Glu Ala Thr Asp Gln Ile Cys Asp Pro Ser  
 770 775 780  
 Val Lys Glu Asn Ile Ser Gly His Thr Leu Ser Glu Leu Ser Asn Thr  
 785 790 795 800  
 Gln Thr Phe Leu Arg Tyr Lys Asp Gln Ser Ser Ser Thr Glu Lys Thr  
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 Pro Val Thr Glu Ser Glu Ser Gln Ser Leu Ile Ala Ser Pro Ser Ala  
 820 825 830  
 Ser Glu Thr Val Pro Ile Ala Ser Gly Glu Ser Asp Ile Glu Asn Leu  
 835 840 845  
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Ser Gly Phe Met Leu Ala Asn Pro Phe Lys Ile Thr Tyr Glu Pro Ile

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